



FINDING OF NO SIGNIFICANT IMPACT

Replacement, Rehabilitation and Maintenance of Backcountry and Corridor Toilets Grand Canyon National Park

Grand Canyon National Park proposes to replace and/or rehabilitate and maintain eleven toilets in the backcountry and seven toilets in the Cross-Canyon corridor in the inner canyon of Grand Canyon National Park. There is an immediate need to address the condition of backcountry toilets in the Park and the Park's toilet maintenance program. The proposal is needed to address the following management concerns: Many of the existing backcountry toilets are substandard and pose safety and health risks for Park personnel and visitors and many of these toilets are difficult to maintain and are not conducive to regular routine maintenance. An evaluation of the backcountry and corridor toilet maintenance program in one document provides an opportunity to adequately analyze impacts of the program. This includes a "Minimum Requirement Analysis" for potential impacts to proposed wilderness.

In March 2003 the National Park Service (NPS) prepared an *Environmental Assessment/Assessment of Effect (EA/AEF) for the Replacement, Rehabilitation and Maintenance of Backcountry and Corridor Toilets*. This EA/AEF, in accordance with the National Environmental Policy Act, analyzes the impacts that will likely result from implementation of the project. The EA/AEF evaluated three alternatives, Alternative A, the No Action Alternative, Alternative B, the agency's preferred alternative, and Alternative C.

PREFERRED ALTERNATIVE

The preferred alternative, summarized in Table 4 and Appendix A2 in the EA/AEF, includes the replacement of existing backcountry substandard pit/outhouse toilets with aboveground vault toilets, cyclic maintenance of backcountry and corridor toilets and periodical empty/removal methods for backcountry and corridor toilets. These components are described in detail below.

Toilet Type: Some backcountry sites already have aboveground vault units and one backcountry site (Hermit Creek) has a composting toilet. Alternative B will include the replacement of existing pit toilets or outhouses at five backcountry sites (Horseshoe Mesa, Monument Creek, Clear Creek, Salt Creek, and Horn Creek) with aboveground vault toilets. The Monument Creek toilet(s) will be installed in a slightly different location than the existing pit toilets to facilitate its use and to avoid nearby archeological sites. The current pit toilets will be removed and closed. The new proposed location is visible from the campground and to hikers on the trail. Archeological surveys of this site have been conducted and no sites were found. The Waldron Basin toilet will be installed near the Hermit Trail/Dripping Springs trail junction, provided this toilet is deemed necessary, as described in the mitigation measures section of this document. The proposed location for this toilet is approximately 30 meters south of the trail sign and will require a small spur trail and sign. Archeological surveys of this site have been conducted and no sites were found. Privacy screening will not be needed for the Waldron Basin toilet.

Vault toilets will have a capacity of approximately 95 gallons, will weigh about 100 pounds when empty,

will have a removable lid to facilitate cleaning and servicing, will be made of material suited for long-term sun exposure, and will have an adequate venting system to allow for some composting functions. These units will be relatively small and will sit on the ground, requiring very little disturbance of the ground or surrounding vegetation. Toilets will be portable and could be removed if needed. Toilets will be similar in size and shape to those already in use at Upper Tapeats, Tanner and Deer Creek. All composting toilets will remain in their current condition.

Screening and Tool Cache: Visual screening may need to be installed at some of the sites, depending on the vegetation screening that already exists on site. If suitable vegetative screening is available on site, no additional screening will be added. If suitable vegetative screening is not available, a small privacy screen may be added during toilet installation. This privacy screening will be temporary and portable, allowing for easy assembly and disassembly when necessary. Installation of screening will not require ground disturbance. Each vault toilet location will also be equipped with a small tool cache that will be prefabricated, temporary and portable and will also not require any additional ground disturbance. This tool cache will be situated aboveground and used to store a few pieces of equipment necessary during monthly cyclic maintenance activities.

Installation Method: The vault toilets will be transported into the backcountry via helicopter. The crew that will be needed for the installation will access the site via mule or by foot, depending on the site's location. The helicopter will bring in an empty vault and will hover over the site while the ground crew releases it. Although variations may occur due to differences in terrain and access at each site, this will require a helicopter to hover over the site for approximately 2-3 minutes before returning to the South Rim. The helicopter will only land in the rare event that no NPS personnel are present on the ground to perform helicopter duties. The landing site will be an area already disturbed and generally void of vegetation and will not require any substantial vegetation disturbance.

Cyclic Maintenance: Maintenance for each toilet will occur periodically (monthly during the busiest season) and will be conducted by personnel accessing the sites via foot, mule and/or river transport depending on the site. Cyclic maintenance activities will include adding enzymes to the toilet, stirring, site work, site cleanup, pruning along the trail and obliteration of social trailing as needed.

Maintenance: Empty/Removal Method: The empty/removal method for each toilet will vary by site. Horseshoe Mesa, Monument Creek, Upper Tapeats, Deer Creek, Clear Creek, Hermit Creek, and Waldron Basin will utilize helicopter flights to transport in new units and transport out full units typically once a year (or, in the case of Hermit Creek, fly in barrels, and then fly out the barrels when full). Tanner, Salt Creek and Horn Creek toilets will be emptied yearly, or as deemed necessary for the level of use, and will be accessed via mule and/or boat. The number of flights necessary per site for each empty/removal trip will be about one flight/unit. Refer to Table 4 of the EA/AEF for details on empty/removal specifics for each site. The helicopter will bring in an empty vault, hover over the site while the ground crew releases it and then the full vault will be hooked up for helicopter removal. The modification of the vault toilet so that it can be directly transported via helicopter is currently being designed and tested by NPS staff. In the unlikely event that this is not successful, waste will be removed from the vaults and transferred to barrels that can be flown out. Although variations may occur due to differences in terrain and access at each site, this will require a helicopter to hover over the site for approximately 2-3 minutes before returning to the South Rim. The helicopter will only land in the rare event that no NPS personnel are present on the ground to perform helicopter duties. The landing site will be an area already disturbed and generally void of vegetation and will not require any substantial vegetation disturbance.

Mitigation Measures

The mitigation measures listed below are considered part of the preferred alternative and will be followed during project implementation. These actions were developed to lessen the potential for adverse impacts

from implementing the preferred alternative, and have proven to be very effective in reducing environmental impacts on previous projects.

- A Revegetation Plan will be developed for the project by a landscape architect or other qualified individual, in coordination with the Park Restoration Biologist. Any revegetation efforts will use site-adapted native species and/or native seed, and Park policies regarding revegetation, site restoration and vegetation pruning will be incorporated into the plan. The plan will address, among other things, the use of native species, plant salvage potential, exotic vegetation and noxious weeds, pruning and pedestrian barriers. Policy related to revegetation (see Chapter 9) will be referenced in *NPS Management Policies (2001)*.
- To prevent and minimize the spread of exotic vegetation and noxious weeds, the Revegetation Plan mentioned above, will be followed. The following mitigation measures will be implemented, and will be incorporated into the plan:
 - ❑ Existing populations of exotic vegetation at the site will be treated before installation activities.
 - ❑ A restoration biologist or Park natural resources representative will be on-site during the toilet installation to provide input on the best location to minimize the need for any pruning or plant salvage.
 - ❑ All vegetated areas that are disturbed by installation of the vault toilets will be revegetated using site-adapted native seed and plants.
 - ❑ Post-project exotic plant monitoring will also be conducted in the project area, as time and funding allows.
- Maintain ground cover and minimize the amount of bare soil at each site as much as possible. If helicopters are used, minimizing bare soil at the sites will reduce the likelihood of dust being stirred up during helicopter use at each site.
- Personnel installing and maintaining the toilets will be informed about special status species. Installation or empty/removal activities in the area will cease if a species is discovered in the project area, until Park staff re-evaluates the project.
- If a California condor occurs at the installation or empty/removal site, activities within 90 meters (300 feet) of the bird will cease until it leaves on its own or until techniques are employed by permitted Park staff or Peregrine Fund personnel which results in the individual condor leaving the area. Condor breeding area restrictions may be necessary for sites where helicopters are proposed for installation and/or maintenance. Based on the most current information as of January 2003, restrictions may be necessary for Horn Creek, Upper Tapeats, Indian Garden, Cedar Ridge and/or Tipoff. If a situation arises where toilet installation or periodic removal by helicopter is deemed necessary during the condor breeding season, the park biologist will be consulted and a determination made on whether flights can occur in this area, pending evaluation of the most current condor locations.
- Personnel conducting the work will be informed to not interact with condors and to immediately contact the appropriate Park or Peregrine Fund personnel when condor(s) occur at the construction site.

- If previously unknown archeological resources are discovered during installation, all work in the immediate vicinity of the discovery will be halted until the resources can be identified and documented and an appropriate mitigation strategy developed, if necessary, in accordance with the stipulations of the 1995 *Programmatic Agreement Among the National Park Service, the Arizona State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the General Management Plan/Environmental Impact Statement, Grand Canyon National Park, Arizona*.
- All workers will be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property. Workers will also be informed of the correct procedures if previously unknown resources are uncovered during construction activities. Data recovery excavations will be carried out to mitigate adverse affects, if deemed necessary.
- If previously unknown buried deposits are located, work will be halted and the Park Archeologist will be consulted immediately. Future actions, depending on the type of discovery, may include data recovery excavations guided by a project-specific research design. Additionally, the NPS will begin consultations under the Native American Graves Protection and Repatriation Act in the event that buried human remains are discovered during archeological excavations or project development.
- Helicopter installation of vault toilets and periodic emptying/removal will be scheduled during the off-peak backcountry season, to minimize disturbance to visitors. The flight path selected for the installation and periodic emptying/removal of the units will be evaluated so as to minimize the time that the helicopter is in the canyon, e.g. dog-leg flight paths that stay over forested areas the longest, and using one quick direct flight to the site only could minimize the noise disturbance generated in the inner canyon.
- Operation of helicopters will not occur between 5 PM and 8 AM year-round and will not occur on weekends or holidays, unless additional time is authorized by Park management, to minimize the impacts of noise from helicopter use to backcountry users and the Canyon's natural quiet.
- The quiet technology (MD-900) helicopter will be used for all backcountry and corridor toilet maintenance, unless unforeseen circumstances exist (aircraft in for maintenance, etc).
- Helicopter use during non-peak backcountry season for most sites will also correspond to a period outside of the Mexican spotted owl (MSO) breeding season. Helicopter use will not occur at any of the toilet sites during the MSO breeding season (March 1 – August 31) to minimize the potential for disturbance to breeding MSO's in the inner canyon. If a situation arises where toilet installation or periodic removal is deemed necessary during the MSO breeding season, the park biologist will be consulted and a determination made on whether flights can occur in this area, pending evaluation of the most current MSO occurrence records and protected activity center (PAC) locations.
- Visitor use monitoring will occur prior to installation of a toilet at Waldron Basin. The results of this monitoring will be used to determine if a toilet is truly necessary at this site. The indicators for toilet necessity will be the same as those already used for existing campsite monitoring. If monitoring indicates that a toilet is necessary:
 - ❑ further evaluation of the location and the toilet's potential impact to Mexican spotted owls will be conducted. Consultation with the U.S. Fish and Wildlife Service and State Historic Preservation Officer will occur to evaluate the potential for impact of the installation of a new toilet within a protected activity center (PAC) and its associated cyclic and periodic maintenance methods.
 - ❑ Surveys for the occurrence of Grand Canyon catchfly in the area will occur. If individuals of this species are detected during surveys, they will be avoided. Consultation with the Park's Vegetation Program Manager will occur prior to installation.

- ❑ Further evaluation of the location and the toilet's potential impact to the historic Hermit Trail will be conducted and documented on an Assessment of Effects form (AEF). Consultation will be initiated with the State Historic Preservation Officer.
- Explore options for informing backcountry and river users in advance when and where toilet maintenance will be occurring at the time of their visit. Checking with the Backcountry Information Center regarding registered users in relevant Use Areas will allow for a list of visitors potentially impacted by scheduled maintenance. Advising river users prior to their departure from Lees Ferry should also be explored for feasibility, and implemented if possible.
- Monitoring administrative helicopter use and mule use necessary for this program will occur. Information that should be tracked annually includes the number of helicopter flights used and hours of flight time per site, level of manpower necessary per site (including cyclic maintenance trips), and the number of mule trips for each site. Routine monitoring of these aspects of the program will assist the park in the review and update of the Backcountry Management Plan.

ALTERNATIVES CONSIDERED

The EA/AEF evaluated three alternatives in detail for addressing the purpose and need for action; the No Action alternative, the Preferred Alternative and one additional action alternative. The preferred alternative is as described previously in this document in detail.

Alternative A – No Action. This alternative is summarized in Table 3 and Appendix A1 of the EA/AEF. This alternative does not meet the purpose and need for the project, but provides a basis for comparison with the action alternatives. This alternative would not change the existing situation. The eleven existing backcountry toilets and the seven corridor toilets would remain in their current form and condition. No toilet would be installed in Waldron Basin, at the junction of the Hermit Trail and the Dripping Springs Trail, and the outhouses at Santa Maria Springs would remain. Substandard pit toilets would remain in use at Horseshoe Mesa, Monument Creek and Clear Creek. Substandard outhouses would remain at Salt Creek and Horn Creek. Aboveground Romtec vaults would remain in use at Upper Tapeats, Tanner and Deer Creek. Cyclic maintenance for backcountry and corridor toilets would occur as time and funding allowed. Pit and outhouse toilets would be emptied periodically by shoveling out the waste to transportable containers and either flown out via helicopter or packed out via backpack, mule, or boat depending on the site. Safety hazards associated with handling of human waste and transporting it out of the inner canyon would continue.

The no action alternative provides a basis for comparing the management direction and environmental consequences of the other action alternatives. If the no action alternative were selected, NPS would respond to future needs related to backcountry and corridor toilets without major actions or changes in course.

Alternative C – Backpacking – This alternative is summarized in Table 5 and Appendix A3 of the EA/AEF. Alternative C also proposes the use of aboveground vault toilets in the backcountry. Like Alternative B, components of Alternative C include replacement of existing substandard vault toilets, installation of new toilets, cyclic maintenance of backcountry toilets, and periodical empty/removal methods. The primary difference between Alternative B and Alternative C is the method proposed for periodic emptying/removal. Components of this alternative are as follows.

Toilet Type: Same as the preferred alternative, as described above.

Installation Method: Same as the preferred alternative, as described above.

Cyclic Maintenance: Same as the preferred alternative, as described above.

Periodic Empty/Removal Method: There are some backcountry toilets that could be shoveled out, waste transferred to portable containers and packed out to the rim via backpack or backpacked to the river and

then transported via boat. Some sites where the preferred method for periodic emptying and removal is mule and/or boat are identified in Alternative B (Salt Creek, Horn Creek and Tanner) and are also carried forward as such in Alternative C. However, in addition, this alternative includes backpacking out the waste as an option for Horseshoe Mesa, Monument Creek, Upper Tapeats, Deer Creek, Clear Creek, Hermit Creek and Waldron (Hermit) Basin. These additional sites are not safely accessible by mule but are accessible on foot. Backpacking out human waste from these toilets would be very labor intensive. An aboveground vault, weighing approximately 750 lbs when full, would require an estimated 30 backpack loads to be completely emptied. This is assuming that a person could carry approximately 25 lbs of waste on their back, along with the weight of their personal gear.

The EA/AEF also includes a discussion of several other alternatives considered but dismissed from detailed analysis. Different options for the type of toilet were explored and varying methods for both the installation of the toilets and the periodic empty/removal methods were explored, but ultimately dismissed from detailed analysis, as described below.

Toilet Type: The use of composting toilets for the replacement of existing backcountry toilets was considered and evaluated. It was estimated that the area of disturbance at any one site for installation of a composting toilet would be approximately 200 square feet. This option was dismissed from further detailed analysis for the following reasons:

- 1) Due to the size and permanency of a composting toilet, composting toilets would be considered new facilities in proposed wilderness. According to wilderness management direction, including Management Policies (2001), new facilities in wilderness should generally be avoided.
- 2) Composting toilets require a suitable location that provides some topographic relief/slope. There needs to be room below the toilet for the composting unit while also allowing for easy access to the building, and access to the composting unit for maintenance. This type of situation would be difficult to find at many of the existing backcountry toilet sites.
- 3) Because of the size and specific location requirements as described above, it is likely that these composting units would not be able to be screened from view effectively and would likely be very noticeable on the landscape. This is not in keeping with wilderness management direction, unless deemed to be the minimum requirement necessary to carry out wilderness management objectives.

The use of chemical toilets was also considered but dismissed from detailed analysis because:

- 1) Chemical toilets have a smaller storage capacity than a vault or a composting toilet, requiring more frequent maintenance than would be feasible in the backcountry.
- 2) Transporting chemical toilets into the backcountry would be difficult.
- 3) Risk of vandalism is high.

Toilet Installation: The method of installation for the new units was the focus of evaluation. Installation options that were initially discussed included putting the vault units on a person's back, transporting via mule and transporting via boat. These options were dismissed from detailed analysis for the following reasons:

- 1) Backpacking: The vault toilets proposed are single units that cannot be disassembled. Due to their size and shape, it would be very difficult for a person to carry a unit on their back safely. Realizing the steep and rugged terrain that would need to be traversed by a person to get to the proposed sites, and the narrowness of the primitive trails in most areas, this option was not considered safe and therefore, not viable.

- 2) Mule Transport: For similar reasons as above, the vault toilets would be difficult to pack on a mule. Due to their size and shape and the fact that they cannot be disassembled, packing them into the inner canyon on mules would be hazardous. Safety concerns arise when mules would need to traverse steep and narrow sections of trail with large bulky units on their backs. Therefore, this option to use mules for installation of the vault units was not considered safe and therefore, not viable.
- 3) Boat Transport: Vault toilets could be transported to some locations via boat. However, for most sites the unit would still need to be transported from the river to the specific toilet site, requiring either mules or backpacking. For the reasons listed above, this option was not considered safe and therefore not viable.

Cyclic Maintenance Method: There were no options for cyclic maintenance that were evaluated and later dismissed from detailed analysis. Cyclic maintenance methods are included in each of the three alternatives described in detail in the next section.

Periodic Empty/Removal Methods

Mules: Some backcountry and corridor toilet sites are accessible by mule. These include all of the toilets along corridor trails (1 and ½ Mile, Indian Garden, Cedar Ridge, Tipoff, Cottonwood, Roaring Springs, and Supai Tunnel) and Tanner, Salt Creek, and Horn Creek. Mule use at all of these sites is evaluated in detail in the Alternatives described later in this Chapter, with the exception of toilets along the North Kaibab Trail (Cottonwood, Roaring Springs and Supai Tunnel). Mule use for periodic emptying/removal was dismissed from detailed analysis for these three sites for the reasons described below:

Cottonwood, Roaring Springs, and Supai Tunnel, on the North Kaibab Trail: The use of mules to periodically empty toilets at these sites was dismissed from detailed analysis. The North Kaibab Trail is a corridor trail that is accessible by mules and visitor mule trips on this trail are routine. This trail is difficult to access in winter/spring months due to snow and ice and the trailhead is typically closed due to inaccessibility of the North Rim during snow. This means that toilet maintenance on this trail would need to occur during the same time period as the visitor use season. However, the high number of visitor mule trips and the high number of hikers on this trail presents a safety issue if mules were also used for toilet maintenance. This trail is more steep and narrow in many places than the Bright Angel or South Kaibab Trail. Adding more mule traffic to some of these steep and narrow segments of trail when potentially high numbers of visitors on mules and on foot are on the trail was considered unsafe. In addition, the Park's mule program, operated out of the Maintenance Division, is located on the South Rim. This would require transporting several mules by trailer from the South Rim to the North Kaibab Trailhead, emptying the toilets, disposing of the waste and then trailering the mules back to the South Rim. For these reasons, mule use for periodic emptying of the corridor toilets on the North Kaibab Trail was eliminated from detailed analysis.

Mules were also preliminarily identified as an alternative to helicopter flights for periodic emptying/removal for Clear Creek, Hermit Basin, Monument Creek, and Horseshoe Mesa. An evaluation of the existing trail standards and conditions, logistics, safety considerations, and potential impacts to resources and visitor experience were discussed. These evaluations are briefly described below.

Clear Creek toilet on the Clear Creek Trail: Clear Creek is 9 miles from Phantom Ranch, the nearest place that has appropriate facilities for keeping livestock overnight. The riding time to Clear Creek and back from Phantom Ranch is 8-9 hours, requiring one night's stay at Clear Creek to be able to accomplish removal of the waste and packing it on the mules. There are currently no adequate livestock facilities at Clear Creek for mules. In addition, the Clear Creek trail does not meet current trail standards for stock use in the final traverse into the drainage and the descent to the creek is not

appropriately graded or constructed to safely support the weight of livestock.

Hermit Basin toilet on the Hermit Trail: The Hermit Trail is currently impassable to livestock. The nearest place with appropriate facilities for keeping livestock overnight is Indian Garden. Indian Garden to Hermit Basin via the Hermit Trail is approximately 18 miles, which would require a night's stay at Hermit Basin. There are currently no adequate livestock facilities at Hermit Basin for mules. In addition, the Tonto Trail from Indian Garden, while passable by mules as far as Salt Creek, does not meet current trail standards for stock use on the descent into Monument Creek, and therefore, would not allow for safe mule use through Monument and further west to Hermit Basin.

Monument Creek toilet on the Hermit Trail: The Hermit Trail is currently impassable to livestock. Monument Creek is nearly 11 miles from Indian Garden, the nearest place that has appropriate facilities for keeping livestock overnight. Due to the length of riding time to Monument Creek and back, one night's stay would be required at Monument Creek. There are currently no adequate livestock facilities at Monument Creek for mules. In addition, the Tonto Trail from Indian Garden to Monument, while passable by mules as far as Salt Creek, does not meet current trail standards for stock use on the descent into Monument Creek.

Horseshoe Mesa toilets on the Grandview Trail: The Grandview Trail is currently impassable to livestock. Horseshoe Mesa is over 25 miles from the South Kaibab Trailhead, requiring at least four days and four overnight stays just to reach Horseshoe Mesa. Each mule requires up to 20 gallons of water per day, and water sources along this section of the Tonto trail are seasonal at best. There is no water at Horseshoe Mesa. In addition, the Tonto Trail East to Horseshoe Mesa would require major trail work to become passable to stock in both Cremation and Grapevine Canyons, in addition to the trail being below trail width standards for stock use.

In summary, the alternative to use livestock to periodically access the toilets and pack out the waste at Clear Creek, Hermit Basin, Monument Creek and Horseshoe Mesa was dismissed from further detailed analysis, for the above reasons. While some of these sites can be accessed at least in part by corridor trails that are up to stock standards, short segments of trails not up to stock standards would have to be used. The reasons described above are summarized below:

- The work required on the trails accessing these sites to make them accessible to livestock would be extensive, and this work is not currently planned or funded
- The use of livestock in these remote and rugged locations on trails that are not up to standards would create multiple safety concerns for personnel responsible for handling the mules and conducting the work
- Lack of adequate livestock facilities at the toilet sites would likely cause damage to nearby soils and vegetation
- The labor and time involved in using stock to empty the toilets at these sites would cost substantially more than using helicopters to perform the same task.

Burros: The use of burros to periodically empty the toilets was considered by the interdisciplinary team. This option was dismissed from detailed analysis due to the following factors: 1) Grand Canyon National Park does not currently have any burros and the purchase of burros and related tack would be costly. Funding for the establishment of a burro program is currently unavailable; 2) The use of burros in the backcountry was evaluated by the Park in years past and determined to be unsuccessful due to the smaller load size that a burro can carry and difficulties with burro temperament; 3) Burros would require facilities and water at remote sites just as mules do, and the bringing burros into areas that lack adequate facilities could impact resources, and 4) Accidental reintroduction of burros into the Park is a possibility. The potential for the establishment of a wild burro herd in the Park is a concern.

Bringing Trails up to Stock Standards: The possibility of bringing some trails in the Park that are currently not up to stock standards, such as the Hermit Trail and the Grandview Trail, up to stock standards was considered by the interdisciplinary team. This was dismissed from detailed analysis due to the fact that this endeavor would be extremely costly and labor intensive. The Hermit Trail, for example, has not been up to stock standards for at least fifty years. Attempting to improve this historic trail enough to safely accommodate the use of stock was considered unrealistic considering the Park's current budgets and the direction outlined in the GMP. The GMP states that "The Hermit and Grandview Trails will be suggested as alternatives to the corridor trails for visitors with experience hiking in Grand Canyon. However, neither trail use nor maintenance will be increased to levels that will alter their status as threshold trails...." (GMP page 55). It is possible that bringing either the Hermit or Grandview Trails up to current stock standards would also alter their status as threshold trails.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which guides the Council on Environmental Quality (CEQ). The CEQ provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Using selection factors from the Choosing by Advantages process and through the process of internal scoping, scoping with the public and other agencies, the environmentally preferred alternative selected is Alternative B. Alternative B best meets the purpose and need for action and best addresses the overall NPS objectives and evaluation factors. Safety concerns and health risks were important factors used in comparing the use of helicopters for installation and maintenance and the use of mules, backpacks, and shoveling/transporting human waste out of the inner canyon. While both action alternatives strive to and meet each of the 6 criteria to some extent, each alternative meets them to varying degrees. Criteria 2 and 3 above are best met by Alternative B because it more adequately addresses reducing health and safety risks to employees and visitors. Both action alternatives meet criteria 4 and 5 by replacing existing backcountry toilets with small, temporary above ground vault toilets that are suitable for their location within proposed wilderness and will eliminate the negative impact of the some of the existing substandard pit toilets on the surrounding landscape and visitors. Both action alternatives address Criteria 6 by replacing backcountry toilets with above ground vaults that can be emptied and then reused.

No new information came forward from public scoping or consultation with other agencies to necessitate the development of any new alternatives, other than those described and evaluated in this document. Alternative B is recommended as the Preferred Alternative and meets both the Purpose and Need for action and the project objectives.

However, as stated above, Alternative C also addresses many of the criteria listed above for enhancing the quality of the human environment. NPS may entertain proposals from outside organizations or contractors to implement portions of Alternative C for selected toilet sites. NPS recognizes the merits of Alternative C in minimizing impacts of mechanized equipment (helicopters) in proposed wilderness, but believes there are potential safety, feasibility and budgetary challenges in doing so with NPS personnel. While Alternative B is the preferred agency alternative for the reasons described above, NPS is willing to entertain proposals from outside groups to backpack/boat waste out of the inner canyon. NPS would consider these proposals on an experimental basis, provided they could demonstrate that the work could be performed within the anticipated level of impact to park resources as described under Alternative C in the EA/AEF, could stay within acceptable use parameters to safeguard people, park resources and wilderness, and could be performed at a similar cost as Alternative B.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse. As fully discussed in the EA/AEF, the preferred alternative will not affect air quality, soils, water, vegetation, floodplains, wetlands, general wildlife populations, wildlife species of interest, environmental justice, prime and unique farmland, or the socioeconomic environment. The preferred alternative will not result in alteration of areas proposed for wilderness designation or wilderness boundaries.

Implementation of the preferred alternative will result in moderate, beneficial long-term impacts to visitor experience due to replacement of substandard pit toilets and substantial reduction in the number of helicopter flights necessary for toilet maintenance. Moderate short-term adverse impacts will also occur due to increased noise during administrative helicopter use.

Implementation of the preferred alternative will result in minor to moderate short-term adverse impacts to soundscape from increased noise due to occasional administrative helicopter use in the backcountry. Minor long-term adverse impacts will also result due to the continuation of the maintenance program over time, realizing that administrative helicopter use will be long-term but occasional.

Implementation of the preferred alternative will result in adverse impacts to a special status plant, the Grand Canyon catchfly, which will be minor due to potential installation of a toilet in Waldron Basin. For purposes of Section 7 consultation under the Endangered Species Act, implementation of the preferred alternative, with adherence to mitigation measures, will result in a “no effect” determination for both Mexican Spotted Owl and California condor. A copy of the EA/AEF was sent to the U.S. Fish and Wildlife Service during the public comment period.

Implementation of the preferred alternative will result in occasional, localized minor adverse impacts to cultural resources from periodic use of mules on backcountry trails. Minor long-term beneficial impacts to the archeological site at Monument Creek site will result due to relocation of this toilet. After applying the Advisory Council on Historic Preservation’s criteria for adverse effects (36 CFR, Part 800.5, Assessment of Adverse Effects), the NPS determines that implementation of the replacement, rehabilitation and maintenance of backcountry and corridor toilets will result in a “no historic properties affected” determination. Concurrence from the State Historic Preservation Office on this determination was received on 30 April 2003.

Implementation of the preferred alternative will result in moderate, beneficial long-term impacts to park operations due to replacement of substandard pit toilets with units that are easier to maintain and a cyclic maintenance program designed to maximize length of time between maintenance trips.

Degree of effect on public health or safety. Human health and safety was a key component in the analysis of alternatives in the EA/AEF under both visitor experience and park operations impact topics. There are risks to human health and safety associated with the use of backcountry and corridor toilets and the methods used to maintain them. These include: 1) risks associated with exposing visitors to unsanitary conditions at existing substandard pit toilets and outhouses that are difficult to maintain in a timely manner, and 2) risks associated with being in proximity to Park personnel while servicing a toilet or hiking on the same trail as Park personnel backpacking human waste out of the canyon. Risks to visitors are also associated with mule transport of waste on the same trails as hikers and helicopter transport of waste over use areas, but these risks are less obvious and less likely. Ongoing activities as part of the existing program are conducted in accordance with standard operating procedures for the Park, job hazard analyses and with trained personnel.

Under implementation of the preferred alternative, toilets will be more sanitary and clean. Replacement of substandard pit toilets will substantially reduce the need to shovel out human waste and transfer to portable containers. Safety risks associated with mule handling and mule/pedestrian conflicts while sharing trails are present, but are minimized by adherence to standard operating procedures and the use of trained personnel. Safety risks include being bitten or kicked, being stepped on, pushed down or bucked off or pushed off the trail. Trail conditions can add another level of risk to mule use and risks to visitors in heavily used day areas. Safety risks associated with helicopter use are also an issue but will likewise be minimized by adherence to standard operating procedures and the use of trained personnel.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. As fully discussed in the EA/AEF, the preferred alternative will not affect air quality, soils, water, vegetation, floodplains, wetlands, general wildlife populations, wildlife species of interest, environmental justice, prime and unique farmland, or the socioeconomic environment. The preferred alternative will not result in alteration of areas proposed for wilderness designation or wilderness boundaries. There are no wild and scenic rivers in the project area and none will be affected by implementation of the preferred alternative.

While the inner canyon of Grand Canyon National Park is extremely diverse in terms of topography, vegetation, wildlife habitat and cultural resources, implementation of the preferred alternative, due to its limited scope will not affect these resources.

Consultation with interested tribal officials and the Arizona State Historic Preservation Officer has been completed.

Degree to which effects on the quality of the human environment are likely to be highly controversial. There were no highly controversial effects identified during either preparation of the EA/AEF or the public review period.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks. There were no highly uncertain, unique or unknown risks identified in the EA/AEF or during the public review period.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The preferred alternative neither

establishes a precedent for future actions with significant effect nor represents a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Impacts of the preferred alternative identified in the EA/AEF were to wilderness, visitor experience, park operations, Mexican spotted owl, California condor, Grand Canyon catchfly, soundscape, and cultural resources. As described in the EA/AEF, a variety of past, present, and reasonably foreseeable future actions have affected or may affect resources in the inner canyon. Implementation of the preferred alternative in combination with past, present and reasonably foreseeable future actions will result in impacts to resources that range from negligible to moderate, as summarized below.

Implementing the preferred alternative, in combination with past, present and reasonably foreseeable future actions will not result in changes to wilderness character due to the fact that no changes to backcountry use area designations or the potential for areas to be designated as wilderness in the future will occur; moderate long-term beneficial impacts to visitor experience; moderate long-term beneficial impacts to park operations; minor adverse impacts to Mexican spotted owl; minor to moderate adverse impacts to California condor; minor adverse impacts to Grand Canyon catchfly; moderate long-term adverse impacts to soundscape; and moderate adverse and minor to moderate beneficial impacts to cultural resources.

Implementation of the preferred alternative minimizes the number of helicopter flights necessary in proposed wilderness, over the existing program. As stated in the EA/AEF on page 36, there will be an approximately 61% reduction in the number of flights necessary for maintenance of backcountry toilets under the preferred alternative, when compared to the current program.

Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The two existing toilets at Horseshoe Mesa are both outside of the Grandview Mine Historic District. Two other National Register properties that exist within the inner canyon are the Cross Canyon Corridor Historic District and the Trans-Canyon Telephone Line Historic District. These are sensitive cultural resources and have been carefully considered throughout the planning process for this project, as documented in the EA/AEF. Due to the fact that ground disturbance and vegetation removal is minimal under the preferred alternative, impacts to cultural resources are not expected. The State Historic Preservation Office concurred with the Park's determination that implementation of the preferred alternative will result in a "no historic properties affected" determination on 30 April 2003.

All toilet sites have been surveyed for archeological resources and measures to avoid impacts to these resources have been incorporated into the proposed actions. Consultation with the concerned tribal officials has been completed.

If previously unknown archeological resources are discovered during construction, all work in the immediate vicinity of the discovery will be halted until the resources are identified and documented. An appropriate mitigation strategy, if necessary, will be developed in consultation with the Arizona State Historic Preservation Office and concerned tribal officials.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat. The California condor was listed as an endangered species in 1967. A nonessential, experimental population of California condors has been established in Northern Arizona, and within Grand Canyon

National Park the condor has the full protection of a threatened species. For purposes of Section 7 documentation under the Endangered Species Act, Park staff has determined that implementation of the preferred alternative will result in a “no effect” determination for the California condor. While there is the potential for condors to be attracted to the increased activity at the toilet sites during installation and/or periodic maintenance, and future nesting areas have the potential to occur in the vicinity of toilet sites, mitigation measures have been developed to minimize the likelihood of disturbance to condors as a result of this project. These measures are included as part of the preferred alternative and are identified in the mitigation measures section of this document.

The Mexican spotted owl was listed as a threatened species in 1993 and parts of Grand Canyon National Park were designated as critical habitat in 2001. For purposes of Section 7 documentation under the Endangered Species Act, Park staff has determined that implementation of the preferred alternative will result in a “no effect” determination for the Mexican spotted owl (MSO). This determination is based on the fact that habitat manipulation is not a component of this project, the toilet sites are not considered MSO habitat, and that mitigation measures have been developed for this project to minimize the likelihood of helicopter disturbance. Mitigation measures have been developed to minimize the likelihood of disturbance to MSO as a result of this project. These measures are included as part of the preferred alternative and are identified in the mitigation measures section of this document.

Whether the action threatens a violation of Federal, state or local environmental protection law. The preferred alternative violates no federal, state, or local environmental protection laws.

IMPAIRMENT OF PARK RESOURCES OR VALUES

In addition to determining the environmental consequences of the preferred and other alternatives, NPS policy (*Management Policies*, 2001) requires analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of the park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, will harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values. Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. An impact to any park resource or value may constitute impairment. An impact will be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park’s general management plan or other relevant NPS planning documents.

Because there will be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Grand Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents, there will be no impairment of Grand Canyon National Park's resources or values as a result of implementation of the preferred alternative.

PUBLIC INVOLVEMENT

This project was the subject of a public scoping letter that was submitted to a 300-person Grand Canyon National Park mailing list and a 150-person backcountry users mailing list on 24 October 2001. This scoping letter was also posted on the Grand Canyon National Park website and the Grand Canyon Hikers internet newsgroup on 25 October 2001. The purpose of the scoping letter was to describe the proposed action to any interested/affected parties and solicit comments from those who may have issues with the proposed action. As a result, 19 responses were received from individuals and six responses were received from agencies or groups. The agencies/groups included the Arizona Wilderness Coalition, U.S. Fish and Wildlife Service, Arizona Department of Environmental Quality, Zuni Heritage and Historic Preservation Office, the Navajo Nation Historic Preservation Department and the Hopi Tribe Cultural Preservation. The responses from the Zuni Tribe, Navajo Nation and the Hopi Tribe offered no specific comment on the proposal and thanked the Park for keeping them informed. The U. S. Fish and Wildlife Service provided a list of federally listed species in Coconino County. The Arizona Department of Environmental Quality indicated that no Section 404 permit is required for this project. The Arizona Wilderness Coalition brought up concerns regarding the relationship of this project with the existing 1988 Backcountry Management Plan and the 1998 Draft Wilderness Management Plan, issues regarding Minimum Requirement Analysis and specific comments on three of the current toilet sites. Of the nineteen responses from individuals, fifteen of them were positive and indicated support of the project, one was negative and indicated a preference for composting toilets over vault toilets in the backcountry and three responses were neutral. The NPS performed a content analysis on this information, information gained from internal scoping, and information gained from scoping with other agencies. From this effort, the NPS did not identify any additional significant issues for analysis.

The EA/AEF was made available for public review and comment during a 30-day period ending 25 April 2003 through a combination of direct mailing, issuance of a press release and posting on the Park's website. Nine responses were received. Three responses were from individuals who expressed support for the preferred alternative B, three responses did not specify issues, concerns or support for an alternative (SHPO, Hopi Tribe, Wild Wilderness) and three responses (individual, River Runners for Wilderness and Arizona Wilderness Coalition/Wilderness Watch) expressed support for Alternative C. Substantive comments are addressed in detail in the errata sheet attached to this document.

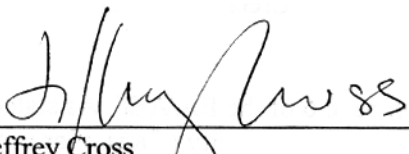
CONCLUSION


Alternative B is recommended as the preferred alternative and meets both the purpose and need for action and the project objectives. NPS intends to implement Alternative B immediately upon notification of the public that the EA/AEF process has been completed and this FONSI issued. However, NPS may entertain proposals from outside organizations or contractors to implement portions of Alternative C for selected toilet sites on a trial basis. NPS recognizes the merits of Alternative C in minimizing impacts of mechanized equipment (helicopters) in proposed wilderness, but believes there are potential safety, feasibility and budgetary challenges in doing so with NPS personnel. While Alternative B is the preferred agency alternative for the reasons described in this document, NPS is willing to entertain proposals from outside groups to backpack/boat waste out of the inner canyon. NPS would consider these proposals on an experimental basis, provided they could demonstrate that the work could be performed with minimal

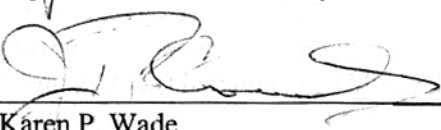
impact to park resources (as described under Alternative C in the EA/AEF) and could stay within acceptable use parameters to safeguard people, park resources and wilderness. If so, this program would be implemented on a trial basis, with a commitment to monitoring. Monitoring would include verifying its success in safeguarding human health and safety, minimizing resource impacts and verifying manpower and cost estimates. If the backpacking of waste by contract/agreement was not successfully demonstrated at the end of the trial period, or successfully carried out at any subsequent time, the procedures outlined in Alternative B to maintain the toilets would be restarted.

Implementation of Alternative B, with the possible implementation of a subset of Alternative C on an experimental basis, does not constitute an action that normally requires preparation of an environmental impact statement (EIS). Negative environmental impacts that could occur are negligible to moderate in effect. There are no unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, known ethnographic resources, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that the project does not constitute a major federal action significantly affecting the quality of the human environment and an EIS will not be required for this project and thus will not be prepared.

Recommended: 
Jeffrey Cross
Science Center Director, Grand Canyon National Park
Date 8/28/03

Recommended: 
Joseph E. Alston
Superintendent, Grand Canyon National Park
Date 9-4-03

Approved: 
Karen P. Wade
Intermountain Regional Director
Date 9/9/03

ERRATA SHEET

Replacement, Rehabilitation and Maintenance of Backcountry and Corridor Toilets Grand Canyon National Park

The NPS received nine letters in response to our request for comments on the EA/AEF for Replacement, Rehabilitation and Maintenance of Backcountry and Corridor toilets EA/AEF (March 2003). The comment period ended 25 April 2003. An interdisciplinary team reviewed these responses to identify any substantive comments. Substantive comments were considered to be comments which:

- question, with reasonable basis, the accuracy of information in the EA.
- question, with reasonable basis, the adequacy of environmental analysis.
- present reasonable alternatives other than those presented in the EA.
- cause changes or revisions in the proposal.

Several comments were received that were considered substantive comments. These comments were reviewed in detail by the project interdisciplinary team. Although other alternatives were suggested in the comments received, these alternatives were not considered reasonable. Substantive comments received are summarized below with the NPS response.

***Comment:* Completely remove the existing toilets at Monument, Horseshoe Mesa, Upper Tapeats and Clear Creek and implement a human waste carry-out (i.e. Wag Bag) system for these sites.**

Response: The toilets at these sites were installed previously and are in compliance with the 1988 Backcountry Management Plan. The 1988 plan allows toilets in Threshold and Primitive management zones as a means of dealing with localized problems, as stated on page 2 of the EA/AEF. As stated on page 52 of the EA/AEF, all of these sites occur in Threshold management zones, and are all in place to deal with localized problems.

NPS staff believes that human waste carry-out methods may be feasible for some areas of the park. Some other NPS units are experimenting with this type of system and are having success in some places. However, the toilet sites suggested in this comment would not be the most suitable places for experimenting with a carry-out system. These are some of the highest use areas in the backcountry and are all in Threshold zones. Sites that receive less use, such as Horn Creek or Salt Creek, may be more appropriate sites.

A brief discussion of waste pack-out options is included on page 6 of the EA/AEF. As stated here: “GRCA is in the early stages of determining the feasibility and applicability of a similar program in the backcountry. The upcoming revision of the Park’s Backcountry Management Plan in late 2005 would be a logical forum for a detailed evaluation of such a program.”

***Comment:* Service all other toilets with mules, river trips, or backpacking using NPS employees, volunteers, or independent contractors.**

Response: This is a re-statement of support for implementation of Alternative C. Alternative C includes an analysis of mules, river trips and backpacking options for toilet maintenance. Alternative C assumes NPS implementation, but does not specify how this work would be conducted (i.e. volunteers, contract with outside organization or NPS employees). NPS believes that the analysis presented in the EA/AEF and the environmental consequences of implementing Alternative C would not change if the work were conducted with volunteers or an outside contractor. As stated in the FONSI, NPS has selected Alternative B as the preferred alternative for this project. However, the park is interested in entertaining proposals

from outside contractors or volunteer organizations for implementing a portion of the maintenance program as outlined in Alternative C on an experimental basis, provided this could be done at a similar cost and within the level of impacts to park resources that is described in the EA/AEF.

***Comment:* Use pack stock to maintain toilets on the North Kaibab Trail.**

Response: The use of mules for toilet maintenance on the North Kaibab Trail was considered by NPS, but ultimately dismissed from detailed analysis (pages 16-17 of EA/AEF). NPS believes using mules on this trail to periodically empty these toilets would exacerbate the existing situation (the large number of visitor mule trips, the large number of hikers, and the limited season in which the trail is passable) and would result in unsafe conditions, as described in the EA/AEF (pages 16-17). In addition, using mules to empty these toilets is simply not feasible under the current staffing and funding levels of the toilet maintenance program, especially considering the volume of waste in these units along the North Kaibab Trail.

***Comment:* Utilize cyclic maintenance trips to remove waste periodically at each site.**

Response: Removing waste on a monthly basis exposes the person conducting the patrol to partially composted waste and having to transfer it to transportable containers on a relatively frequent basis. The risks associated with this are as described in the EA/AEF (pages 46, 49-50, 56-57). More importantly, periodic and relatively frequent (monthly or bimonthly) removal of uncomposted or partially composted waste is ultimately inefficient. The composting process reduces volume and allows for partial treatment of various potentially harmful pathogens that are present in fecal material. The longer the retention time, the greater the amount of pathogen death that will occur before the material is handled. An added benefit of greater retention time coupled with well-timed servicing is that summer heat dries out the material dramatically and reduces the weight of the material, up to 50% (Jenkins 1999). It would be inefficient and would cause unnecessary exposure to pathogens to remove human waste on a monthly basis from any properly maintained toilet.

***Comment:* Use mules to service Clear Creek.**

Response: The use of mules to periodically empty the toilet at Clear Creek was considered, but ultimately dismissed from detailed analysis, as discussed in the EA/AEF (page 17). NPS disagrees with the assertion that only short sections of the trail would require minor restoration. NPS believes that substantial restoration of the trail would be necessary to accommodate safe mule passage on this trail. Another reason mule use on this trail was ultimately dismissed from further analysis (as documented on page 17 of the EA/AEF) is the fact that there are no livestock facilities at the site. NPS believes that staying overnight with mules in an area without livestock facilities results in mule urine and feces in water sources where mules are taken to drink and in resource (soils, vegetation) damage.

***Comment:* Cumulative impacts to wilderness from implementation of Alternative B are not negligible. Analysis should include evaluation of administrative motorized river patrols and non-emergency use of chainsaws for the analysis.**

Response: The EA/AEF (page 44) states that “A minimum requirements analysis to determine the minimum tools or methods necessary for both the installation and long-term maintenance of these toilets in proposed wilderness is the subject of the visitor experience, park operations, and soundscape impact topics included later in this Chapter. A summary of this analysis is also included in Appendix D, the MRA worksheet.” The analysis for wilderness then focused solely on the fact that this project will not result in backcountry use area changes, will not alter areas proposed for wilderness designation, nor result

in boundary changes. For these reasons, cumulative impacts to wilderness were considered negligible. The EA/AEF (page 38) states that “Potential for impacts to wilderness resources and character are as described in soundscape, special status species and visitor experience topics.” Cumulative impacts to these other impact topics range from minor to moderate. NPS agrees that cumulative impacts to wilderness resources and character will not be negligible, but that quantifying or measuring an impact to “character” or the “wilderness resource” is difficult to do. NPS chose to look at these types of impacts under other closely-linked topics – such as maintaining natural quiet in proposed wilderness under the soundscape section.

The cumulative impact analysis for soundscape included other administrative aircraft overflights and emergency aircraft use (pages 64-68), but did not include an evaluation of the impact of chain-saw use or administrative motorized river patrols in proposed wilderness. The impacts of administrative motorized patrols and non-emergency chainsaw use are evaluated in project-specific MRA’s and/or NEPA documents. While including these activities in the cumulative impacts analyzed in the EA/AEF would contribute to the analysis, inclusion of these actions in the EA/AEF would not result in any change in the magnitude of the impacts to soundscape or visitor experience. This is due to the fact that these are localized and sporadic actions, and they occur only after an individual MRA for each project is conducted.

Comment: The alternative comparison is not balanced – for instance, the risk of leaking storage containers is negligible, the potential for boat flips is small, there are occasional helicopter drops and there are simple and effective safety precautions to take when handling human waste.

Response: Human health and safety was a topic discussed for each alternative both under Visitor Experience and Park Operations (pages 46, 47, 48, 49, 53, 54, 55, 56). Risks of using helicopters are discussed primarily on page 54. It states in this paragraph “The safety risks associated with the use of helicopters to periodically maintain toilets, with short hover times and relatively short flights to and from the toilet occasionally throughout the year, is considered less than those risks associated with mules to transport waste or the use of backpacking. This is primarily due to the fact that employees are exposed to the helicopter for substantially shorter periods of time, when compared to multiple day trips with mules for an individual site or multiple-day hiking trips to backpack waste from an individual site.” The EA/AEF on page 56 discusses risks of backpacking waste and states “hazards include heat stress....slips and falls, potential for contamination from fecal material coming into contact with employee’s food and water supply...” The paragraph on river risks (page 57) states that there would be an “increased” risk of released waste into the river with a boat flip, etc. but said that this “risk may not be high” but “has the potential to increase with the increased frequency and high volume of waste proposed for this removal method under Alternative C.”

NPS believes that the analysis presented in the EA/AEF is balanced and adequately summarizes the potential risks associated with each method of toilet maintenance. NPS agrees, however, that the EA/AEF should include a brief discussion of the risks associated with a helicopter having to release a load in flight. Text has been added to the EA/AEF on page 54, second paragraph, so that this paragraph now reads:

“Health and safety risks also play a role in the use of helicopters to periodically maintain existing toilets. Alternative A includes the use of helicopters, up to 62 flights a year (Table 6). This is higher than either of the action alternatives and exposes park employees both in the aircraft and on the ground as support to risks associated with maneuvering a helicopter in remote and rugged locations in the inner canyon. While all employees are trained in standard operating procedures and proper techniques, safety risks exist. There is also the possibility that, when maneuvering a sling load with a helicopter, conditions (wind and weather, mechanical

malfunction, etc.) may require the pilot to drop the load. If the load were a vault toilet full of compost, there are risks associated with releasing this material into the environment and how close this might be to visitor use areas, etc. This type of situation is infrequent and uncommon. Standard operating procedures are in place to address what to do in a situation like this. The safety risks associated with the use of helicopters to periodically maintain toilets, with short hover times and relatively short flights to and from the toilet occasionally throughout the year, is considered less than those risks associated with mules to transport waste or the use of backpacking. This is primarily due to the fact that employees are exposed to the helicopter for substantially shorter periods of time, when compared to multiple-day trips with mules for an individual site or multiple-day hiking trips to backpack out waste from an individual site (Table 6 and Table 8)."

Comment: Maintenance of backcountry toilets under Alternative C will cost less to implement than maintenance under Alternative B.

Response: NPS disagrees. In Table 8 (page 50) of the EA/AEF, estimated backpack loads per site are listed - with a total of 330 backpack loads on 35 miles of trail annually. This alternative would also result in approximately 4,500 lbs of waste transported via river annually. The EA/AEF did not put a cost figure to this estimate. On page 57 it states "The additional time and labor involved in backpacking waste out of these backcountry toilets and subsequent river transport for some sites would likely negate the perceived higher cost of helicopter use for these sites. The use of hikers to backpack waste is a highly labor intensive task...Personnel needs for this type of program on an annual basis would be extreme."

Gross preliminary estimates of the costs associated with each alternative resulted in the estimation that full implementation of the program as described in Alternative B will cost approximately \$135,000 - \$147,000 per year, while full implementation of Alternative C would cost approximately \$267,000 per year. Grand Canyon does not currently have the budget or level of staffing necessary to fully implement Alternative C. As stated in the FONSI, NPS has selected Alternative B as the preferred alternative for this project. However, the park may entertain proposals from outside contractors or volunteer organizations for implementing a portion of the maintenance program as outlined in Alternative C on an experimental basis, provided this could be done at a similar cost and within the level of impacts to park resources that is described in the EA/AEF.

Comment: Another environmental assessment should be prepared if the park determines a toilet in Waldron Basin is warranted.

Response: NPS will reevaluate the adequacy of the existing compliance for this toilet installation, if in fact the toilet is deemed necessary. NPS will follow all current NPS policies and guidelines when evaluating the NEPA compliance necessary for this potential installation. NPS will follow all mitigation measures for possible future installation of this toilet as outlined in the EA/AEF (pages 31-33).

Comment: The EA/AEF does not contain an impact analysis for trails projects.

Response: The EA/AEF includes foreseeable future actions in Appendix E (pages 93-96). This list includes several proposed trails projects. Cumulative impact statements in Chapter 3 of the document consider past, present and foreseeable future projects (refer to pages 48, 50, 55, 60, 65, 66, 67 and 73 of the EA/AEF.)

***Comment (from NPS staff):* Monitoring the effectiveness of the overall backcountry and corridor toilet maintenance program is necessary and will provide information useful for the upcoming revision of the Backcountry Management Plan.**

Response: A mitigation measure has been added that requires that this monitoring be done as part of the implementation of this project. This measure has been added to the EA/AEF on page 33 and is also included in the mitigation listed in this FONSI on page 5. The mitigation measure is as follows:

Monitoring administrative helicopter use and mule use necessary for this program will occur. Information that should be tracked annually includes hours of helicopter flight time per site, level of manpower necessary per site (including cyclic maintenance trips), and number of mule trips for each site. Routine monitoring of these aspects of the program will assist the park in the upcoming preparation of the Backcountry Management Plan.

References:

Jenkins, Joseph C. 1999. The Humanure Handbook: A Guide to Composting Human Manure. Second edition.